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ABSTRACT

This eight-year follow-up study, examining the educational impact of a compensatory early childhood program upon disadvantaged students, compares mean scores of the treatment group of 410 former preschool and all day kindergarten students with those of a comparison group of 141 traditional half day kindergarten students. Empirical evidence shows that, at the end of both the fourth and eighth grades, the treatment group scored significantly higher on both the total reading and total math subtests of the Metropolitan Achievement Test. Additional data indicate that the treatment group had a lower incidence of grade failure and placement in special education. (Author/MP)

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The Long Term Effects of ESEA Title I Preschool and All Day Kindergarten: An Eight Year Follow-Up Study

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Empirical evidence is presented in this eight year follow-up study which compares mean scores of the treatment group of 410 former preschool and all day kindergarten students with those of a comparison group of 141 traditional half day kindergarten students. Data show the treatment group was significantly higher on both the total reading and total math subtests of the Metropolitan Achievement Test at the end of both the fourth and eighth grades. Additional data are presented which show that the treatment group had a lower incidence of grade failure and placement in special education.

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The Long-Term Effects of ESEA Title I Preschool and All Day Kindergarten: An Eight Year Follow-Up Study

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This study examines the long range educational impact of a compensatory early childhood program upon disadvantaged students. This particular program, funded by ESEA Title I, was a two year treatment involving preschool and all day kindergarten. Immediate benefits of such programs as well as two and three year follow-up studies were reported in previous AERA papers in 1973 and 1974. The present study explores the effects upon both treatment and control groups four and eight years after the kindergarten year.

Background

The "Head Start" theory is possibly the best known educational experiment in the history of American public education. Its two basic assumptions are that first, intelligence is malleable, and second, that the optimum time for improvement is early in a child's educational career. Although it was nearly ten years after its 1965 beginning that any significant amount of credible documentation of benefit was published, since 1975 an ever increasing number of researchers have identified both immediate gains and long-term improvement in academic and social skills.

The emphasis upon "Long-Term" is significant and a part of the heritage of Head Start and, therefore, early childhood education. The stinging criticism of the Westinghouse-Ohio Head Start Evaluation (1968) which indicated that participants of Head Start showed modest, but only temporary improvement set the tone for much of the early childhood education research literature. Despite masterful criticism of the Westinghouse-Ohio Study by such researchers as Smith and Bissell (1970), the skeptical response to

virtually all early childhood research since then was that whatever the effects reported, they would probably disappear with time.

Educational Research Service published a summary of research on pre-kindergarten programs, (1976) which reviewed 47 research studies and evaluation reports describing successful early childhood programs. Virtually all reported significant improvement for the preschool groups. British researchers Smith and James (1975) concluded that although the psychological and developmental reasons for preschool were oversold, the evidence suggested that preschool intervention can make an impact, and with the right support, it could be maintained for considerable periods. Nieman and Gastright (1974, 1975) and Cleminshaw and Guidubaldi (1980) provided additional evidence to support the short term impact of these programs on cognitive growth. More recent research has suggested that early childhood programs have long-term as well as short-term effects. The report of Health Education and Welfare (1979) summarized eight follow-up studies of preschool programs. In nearly every case, former preschool students were found to be performing better in school and showed a lower incidence of grade failure and lower rates of placement in special education.

Methods

The study was conducted in the Cincinnati Public Schools System with a declining enrollment pattern from 80,000 to 60,000 during 1970-80. It began in September 1970 with a pool of 551 kindergarten students located in 16 ESEA Title I schools; of these, 410 were enrolled in all day (everyday) kindergarten (ADK) and 141 were in conventional half day (everyday) kindergarten (½DK). It compares fourth and eighth grade achievement test scores of children in the treatment group who had been ADK in 1970-71 with the comparison group who attended only ½DK in 1970-71.

All 551 students in the study were pretested early in September 1970 with a locally developed kindergarten assessment instrument, the Kindergarten Goal Card. This instrument is part of the Educational Testing Service Test Collection and is available from ETS in microfische form.

A larger group of kindergarten students, of which the 551 involved in this study were a subset, were administered the Boehm Test of Basic Concepts during the first week of December, 1970. Although the primary intent of this testing was to identify the effects of preschool six months after the end of the (preschool) program, a comparison of ADK with ½DK was also made. (Eighty-four of the ½DK group and 363 of the ADK had attended PS.)

The third kindergarten testing to be done in this study occured during the first week of April, 1971. The test utilized was the Metropolitan Readiness Test (MRT), subtests 1, 3, 4, and 5. Because the staff of the ESEA Title I Early Childhood Program expressed well-founded concern about "Overtesting" at this point, only about a one-third random sample of ADK classes took the MRT; the entire ½DK group, however, was tested.

Four and eight years later, the opportunity presented itself to compare the same ADK and ½DK groups. The "total reading" and "total math" subtests scores for the Metropolitan Achievement Test (MAT) were tabulated for all available children in both groups for April, 1975 (fourth grade) and April, 1979 (eighth grade). System-wide rosters were used to locate as many "missing" subjects as possible. The data were analyzed using a one-way analysis of variances on the standard scores of the total reading and total mathematics subtests. Additional system-wide records were then examined for missing subjects who had transferred, repeated one or two grades, or for those who had been placed in special education classes for learning disabled (LBD), educable mentally retarded (EMR), or severe behavior handicapped (SBH).

Results

The pretest average raw scores on the Kindergarten Goal Card for the ADK and ½DK groups were not significantly different, although the ½DK group average was 1.6 raw score points higher than the ADK group. The results of the Boehm testing, however, indicated that after only three months of school, the ADK group was slightly, although significantly higher than their ½DK counterparts on each of the four rational factor subtests. The MRT results, however, showed extreme differences in favor of ADK. The kindergarten test data are grouped together in Table 1.

Table 1. Kindergarten Results; in raw score ADK vs. ½DK, 1970-71.

A. All-Day Kindergarten compared with ½DK on Raw Score of Kindergarten Goal Card, September, 1970.

	ADK	½DK
N=	410	141
$\bar{X}$=	37.3	38.9
	9.0	8.9

F ratio= 3.54 ns.

B. All-Day Kindergarten (N=412) vs. Half-Day Kindergarten (N=141) Boehm Test of Basic Concepts, December 1970.

	Mean Rawscore		Stnd. Dev.			
	ADK	½DK	ADK	½DK	F	P
Space	14.4	12.0	4.5	4.8	27.3	.001
Quantity	9.2	7.9	3.5	3.1	13.9	.001
Time	2.0	1.6	1.2	1.2	10.5	.01
Misc.	2.3	1.7	1.4	1.3	14.3	.001

C. Metropolitan Readiness Test (MRT); Sample ADK vs. ½DK, April 1971.

	ADK		½DK
N=	159		147
$\bar{X}$(RS)	42		23
Sd.	12.7		11.8
F	532	p= .001	

The superiority of the ADK group was maintained through grades four and eight. In all cases, MAT scores for the ADK group were found to be significantly higher than those for the ½DK group. In April 1975, the end of the fourth grade, approximately 70 percent of the original pool was identified. The total reading and mathematics standard scores were analyzed using a one-way ANOVA. The treatment group scored significantly higher than the control group ($p < .01$). This was approximately equivalent to a 12 percentile rank difference between the mean scores of the two groups. A comparison of the September 1970 Goal Card pretest means for this subset shows little change or difference, however.

By the end of the eighth grade, (April, 1979) about 50 percent of the original pool remained within the school system. As before, the September 1970 pretest means showed the two groups to be nearly identical. The differences in reading and mathematics were again analyzed using a one-way ANOVA. The remaining ADK Treatment group scored significantly higher on both subtests ($p < .05$). This was equivalent to a 6 percentile rank difference in means on both subtests. Table 2 contains the summary statistics.

Table 2. Fourth and Eighth Grade Total Reading and Total Math Standard Scores, Metropolitan Achievement Test (MAT) comparing ADK with ½DK: April, 1975 and April, 1979. Kindergarten Goal Card: September, 1970.

Fourth Grade (4/75)

	ADK			½DK		
	T. Reading	T. Math	KGC	T.R.	T.M.	KGC
N	285	281	285	84	80	84
$\bar{X}$(SS)	61.4	75.9	37.1 (RS)	56.2	71.9	38.4 (RS)
Sd	9.3	10.9	9.6	9.4	10.8	9.1
%ile	26	32	N/A	14	22	N/A
NCE	36	40	N/A	27	34	N/A
F ratio	13.33**	8.50**	1.20 ns.			

Eighth Grade (4/79)

	ADK			½DK		
	T. Reading	T. Math	KGC	T.R.	T.M.	KGC
N	193	187	193	51	52	51
X(SS)	77.1	91.3	37.7	71.9	87.5	38.0
Sd	13.3	10.4	8.8	12.1	9.7	9.5
%ile	16	18	N/A	10	12	N/A
NCE	29	31	N/A	23	25	N/A
F ratio	6.46*	4.94*	0.05 ns.			

*p=.05; **p=.01

Further, proportionately fewer students in the treatment group had repeated a grade (9% vs. 12%); fewer were found to be in special education (5% vs. 11%; city-wide average is 6%). The proportion moving from the city was about the same in both groups. Table 3 contains the data summaries.

Table 3. ADK + PS Compared with ½DK on Percentage of Students Repeating One Grade, Enrolled in (EMR, LBD, or SBH) Special Education, and Mobility.

	ADK (n = 410)	½DK (n = 141)	City-Wide
Repeating One Grade	9.0%	12.1%	N/A
(EMR, LBD, or SBH) Sp. Ed.	5.1%	10.6%	6%
Left City School System	34%	38%	N/A

Discussion

The results show that the treatment group which initially scored lower than the comparison group, showed significantly higher reading and mathematics scores at both the fourth and eighth grades. However, the results also indicate that both groups are declining in percentile rank compared to the expectations set in the achievement test norms. Although the effects of the early childhood program appear to be significant and lasting, students in the treatment group do show higher losses than the ½DK group when compared with the national norm

group. Further, the system averages (n=3500) for grades four and eight in the same years remained stable at the 24th percentile for total reading and actually gained (24th to 26th percentile) for total math.

A critical unanswered, and at this point unanswerable, question is that of intervening treatments between the kindergarten years and eighth grade. It has been well documented on several similar populations that first and second grade MAT scores for former ADK + PS students in this project were close to the national average, far surpassing the ½DK group. It is probable that because of this advantage, fewer ADK students received the special Title I reading classes given in grades 1-6. This could account for some of the additional loss; regression probably accounts for a sizeable amount, as well.

Of equal importance are the results, paralleling those of the HEW study, which indicate that reduced failure rates and lower incidence of special education placement are found among children who attend early childhood programs. The savings in both emotional stress and dollars should not be underestimated. In the well publicized report on the Perry Preschool Project, Schweinhart and Weikart estimate the dollar return on early childhood education to be 248%, and further state that "Preschool not only prevents problems that, if unattended, cost society much more later on, but increases the effectiveness and efficiency of the investment we already make in schooling."

The results of this and other studies offer compelling evidence that early childhood programs do contribute to the long-term, overall benefit of education and hence, society. The initiative now seems to lie with educational administration.

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